

## WHAT IS CLAIMED IS:

1. A method of analyzing a capital investment in a wireless network, the method comprising:
  - determining a subscriber profit proxy for a plurality of subscribers;
  - determining a number of minutes of use for one or more of the subscribers;

5       determining a service quality metric for one or more sectors in the wireless network;

  - determining an investment return per sector for one or more of the sectors; and
  - analyzing an area for the capital investment, the analyzing being based at least in part on the investment return per sector.

2. The method of claim 1, wherein the subscriber profit proxy is based at least in part on revenue collected  
10       from the subscriber, an expected number of months under a contract, an acquisition cost, and a service delivery cost.

3. The method of claim 2, wherein the subscriber profit proxy (SPP) value is determined at least in part by the equation:

$$SPP_i = V_i * M_i - A_i - S_i$$

wherein

15        $V_i$  is the revenue per month for subscriber  $i$ ;

$M_i$  is the expected months under contract for subscriber  $i$ ;

$A_i$  is the acquisition cost for subscriber  $i$ ; and

$S_i$  is the service delivery cost for subscriber  $i$ .

4. The method of claim 1, wherein the minutes of use is based on call detail records collected during peak  
20       usage periods.

5. The method of claim 1, wherein the service quality metric comprises a dropped call rate for each sector.

6. The method of claim 5, wherein the dropped call rate is determined from call detail records collected from  
each sector.

7. The method of claim 1, wherein the determining the investment return comprises:

- determining a profit per sector;
- determining a dropped-call rate per sector;
- determining an investment needed per sector to recover dropped calls in each sector; and
- 5 determining the investment return per sector based at least in part on the profit per sector, the dropped-call rate for each sector, and the investment needed per sector to recover dropped call in each sector.

8. The method of claim 7, wherein the determining the profit per sector is performed in accordance with the equation:

$$P_k = \sum_i [SPP_i * \frac{MOU_{ik}}{\sum_j MOU_{ij}}]$$

10 wherein

*k* represents a sector;

*i* represents a subscriber;

$P_k$  is the profit for sector *k*;

$SPP_i$  is the subscriber profit proxy value for subscriber *i*;

15  $MOU_{ik}$  is the minutes of use for subscriber *i* in sector *k*; and

$\sum MOU_{ij}$  is a sum of the minutes of use for subscriber *i* in all sectors.

9. The method of claim 7, wherein the determining the investment return is performed in accordance with the equation:

$$R_k = P_k + D_k - I_k$$

20 wherein

*k* represents a sector;

$P_k$  is the profit for sector *k*;

$D_k$  is the drop-call rate for sector *k*; and

$I_k$  is investment needed to investment needed to recover dropped call in sector  $k$ .

10. The method of claim 1, wherein the analyzing the area for the capital investment is performed at least in part by prioritizing the sectors based upon the investment return for each respective sector.

11. A method of determining a decommissioning strategy in a wireless network, the method comprising:
- determining a revenue loss value for one or more base transceiver stations (BTSs) of a plurality of BTSs, the revenue loss value representing an amount of revenue that would be lost if that BTS were to be decommissioned;
- determining an operational cost for each BTS, the operational cost representing an expected cost of
- 5 operating that BTS if that BTS were not decommissioned;
- determining a decommission return value for the one or more BTSs; and
- determining a first BTS to decommission based at least in part on the decommission return value for the one or more BTSs.

12. The method of claim 11, wherein the determining the revenue loss value is performed in accordance with
- 10 the equation:

$$U_k = \sum_i \left[ V_i * \frac{MOU_{ik}}{\sum_j MOU_{ij}} \right]$$

wherein

*k* represents a BTS;

*i* represents a subscriber;

15 *V<sub>i</sub>* is the revenue per month for subscriber *i*;

*MOU<sub>ik</sub>* is the MOU of subscriber at BTS *k*;

*MOU<sub>ij</sub>* is the minutes of use for subscriber *i* in sector *j*; and

$\sum_j MOU_{ij}$  is the sum of the minutes of use for subscriber *i* in all sectors.

13. The method of claim 11, wherein the determining the operational cost is performed at least in part by
- 20 summing a monthly equipment cost, a site monthly leasing cost, and a monthly transport leasing cost.

14. The method of claim 11, wherein the determining the decommissioning return value is performed at least in part by subtracting the revenue loss value from the operational cost.

15. The method of claim 11, wherein the determining the first BTS to decommission is performed at least in part by prioritizing the BTSs in order of the decommissioning return value.

16. A method of determining an investment strategy for a coverage hole in a wireless network, the coverage hole being an area in which service is not available, the method comprising:

- identifying one or more coverage holes in the wireless network;
- determining revenue loss for one or more of the coverage holes;
- 5 determining one or more BTS options for locating a BTS;
- determining a cost for one or more of the BTS options;
- determining an investment return value for one or more of the BTS options; and
- determining one or more locations to deploy a BTS based at least in part on the investment return value for the BTS options.

10 17. The method of claim 16, wherein the identifying one or more coverage holes is based at least in part on dropped calls as indicated by call detail records (CDRs).

18. The method of claim 16, wherein the determining the revenue loss is performed in accordance with the equation:

$$U_k = \sum_i [D_{ik} * AMOU_i * UPM_i]$$

15 wherein

*k* represents a coverage hole;

*i* represents a subscriber;

$D_{ik}$  is a number of monthly dropped calls by subscriber *i* at coverage hole *k*;

$AMOU_i$  is the average MOU per call of subscriber *i*;

20  $UPM_i$  is the revenue generated per minute by subscriber *i*; and

$U_k$  is the revenue loss at coverage hole *k*.

19. The method of claim 16, wherein the determining the cost for one or more of the BTS options is performed at least in part by summing a monthly equipment cost, a site monthly leasing cost, and a monthly transport leasing cost.

20. The method of claim 16, wherein the determining the investment return value is performed at least in part by subtracting the cost from the revenue loss.

21. The method of claim 16, wherein the determining one or more locations to deploy a BTS is performed at least in part by prioritizing the BTSs in order of the investment return value.

22. A computer program product for analyzing a capital investment in a wireless network, the computer program product having a medium with a computer program embodied thereon, the computer program product comprising:

- computer program code for determining a subscriber profit proxy for a plurality of subscribers;
- 5 computer program code for determining a number of minutes of use for one or more of the subscribers;
- computer program code for determining a service quality metric for one or more sectors in the wireless network;
- computer program code for determining an investment return for one or more of the sectors; and
- 10 computer program code for analyzing an area for the capital investment, the analyzing being based at least in part on the investment return for the one or more sectors.

23. The computer program product of claim 22, wherein the computer program code for determining a subscriber profit proxy includes computer program code for including revenue collected from the subscriber, an expected number of months under a contract, an acquisition cost, and a service delivery cost.

24. The computer program product of claim 22, wherein the computer program code for determining a subscriber profit proxy (SPP) value includes computer program code for performing the equation:

$$SPP_i = V_i * M_i - A_i - S_i$$

wherein

$V_i$  is the revenue per month for subscriber  $i$ ;

$M_i$  is the expected months under contract for subscriber  $i$ ;

20  $A_i$  is the acquisition cost for subscriber  $i$ ; and

$S_i$  is the service delivery cost for subscriber  $i$ .

25. The computer program product of claim 22, wherein the minutes of use is based on call detail records collected during peak usage periods.

26. The computer program product of claim 22, wherein the computer program code for determining a service quality metric includes computer program code for determining a dropped call rate for each of the one or more sectors.

27. The computer program product of claim 26, wherein the dropped call rate is determined from call detail records collected from each of the one or more sectors.

28. The computer program product of claim 22, wherein the computer program code for determining the investment return comprises:

computer program code for determining a profit per sector;  
computer program code for determining a dropped-call rate per sector;  
10 computer program code for determining an investment needed per sector to recover dropped calls in each sector; and

computer program code for determining the investment return per sector based at least in part on the profit per sector, the dropped-call rate for each sector, and the investment needed per sector to recover dropped call in each sector.

15 29. The computer program product of claim 28, wherein the computer program code for determining the profit per sector includes computer program code to perform the equation:

$$P_k = \sum_i [SPP_i * \frac{MOU_{ik}}{\sum_j MOU_{ij}}]$$

wherein

*k* represents a sector;

20 *i* represents a subscriber;

$P_k$  is the profit for sector *k*;

$SPP_i$  is the subscriber profit proxy value for subscriber *i*;

$MOU_{ik}$  is the minutes of use for subscriber *i* in sector *k*; and

$\sum_j MOU_{ij}$  is a sum of the minutes of use for subscriber *i* in all sectors.

30. The computer program product of claim 29, wherein the computer program code for determining the investment return includes computer program code for performing the equation:

$$R_k = P_k + D_k - I_k$$

wherein

5            $k$  represents a sector;

$P_k$  is the profit for sector  $k$ ;

$D_k$  is the drop-call rate for sector  $k$ ; and

$I_k$  is investment needed to recover dropped call in sector  $k$ .

31. The computer program product of claim 22, wherein the computer program code for analyzing an area for  
10 the capital investment includes computer program code for prioritizing the sectors based upon the investment return  
for each respective sector.

32. A computer program product for determining a decommissioning strategy in a wireless network, the computer program product having a medium with a computer program embodied thereon, the computer program product comprising:

- computer program code for determining a revenue loss value for a plurality of base transceiver stations (BTSs), the revenue loss value representing an amount of revenue that would be lost if that BTS were to be decommissioned;
- 5 computer program code for determining an operational cost for one or more of the BTSs, the operational cost representing an expected cost of operating that BTS if that BTS were not decommissioned;
- computer program code for determining a decommissioning return value for each BTS; and
- 10 computer program code for determining a first BTS to decommission based at least in part on the decommission return value for the one or more BTSs.

33. The computer program product of claim 32, wherein the computer program code for determining a revenue loss value includes computer program code for performing the equation:

$$U_k = \sum_i \left[ V_i * \frac{MOU_{ik}}{\sum_j MOU_{ij}} \right]$$

15 wherein

$k$  represents a BTS;

$i$  represents a subscriber;

$V_i$  is the revenue per month for subscriber  $i$ ;

$MOU_{ik}$  is the MOU of subscriber at BTS  $k$ ;

20  $MOU_{ij}$  is the minutes of use for subscriber  $i$  in sector  $j$ ; and

$\sum_j MOU_{ij}$  is the sum of the minutes of use for subscriber  $i$  in all sectors.

34. The computer program product of claim 32, wherein the computer program code for determining the operational cost includes computer program code for summing a monthly equipment cost, a site monthly leasing cost, and a monthly transport leasing cost.

35. The computer program product of claim 32, wherein the computer program code for determining a decommissioning return value includes computer program code for subtracting the revenue loss value from the operational cost.

36. The computer program product of claim 32, wherein the computer program code for determining the first  
5 BTS to decommission includes computer program code for prioritizing the BTSs in order of the decommissioning return value.

37. A computer program product for determining an investment strategy for a coverage hole in a wireless network, the coverage hole being an area in which service is not available, the computer program product having a medium with a computer program embodied thereon, the computer program product comprising:

- computer program code for identifying one or more coverage holes in the wireless network;
- 5 computer program code for determining revenue loss for one or more of the coverage holes;
- computer program code for determining one or more BTS options for locating a BTS;
- computer program code for determining a cost for one or more of the BTS options;
- computer program code for determining an investment return value for each of the one or more new BTS options; and
- 10 computer program code for determining one or more locations to deploy a BTS based at least in part on the investment return value for the BTS options.

38. The computer program product of claim 37, wherein the computer program code for determining one or more coverage holes is based at least in part on dropped calls as indicated by call detail records (CDRs).

39. The computer program product of claim 37, wherein the computer program code for determining revenue loss includes computer program code for performing the equation:

$$U_k = \sum_i [D_{ik} * AMOU_i * UPM_i]$$

wherein

*k* represents a coverage hole;

*i* represents a subscriber;

20  $D_{ik}$  is a number of monthly dropped calls by subscriber *i* at coverage hole *k*;

$AMOU_i$  is the average MOU per call of subscriber *i*;

$UPM_i$  is the revenue generated per minute by subscriber *i*; and

$U_k$  is the revenue loss at coverage hole *k*.

40. The computer program product of claim 37, wherein the computer program code for determining the cost for one or more of the BTS options includes computer program code for summing a monthly equipment cost, a site monthly leasing cost, and a monthly transport leasing cost.

41. The computer program product of claim 37, wherein the computer program code for determining an investment return value includes computer program code for subtracting the cost from the revenue loss.

42. The computer program product of claim 37, wherein the computer program code for determining one or more locations to deploy a BTS includes computer program code for prioritizing the BTSs in order of the investment return value.